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Dan T. Rosenbaum* Christopher J. Ruhm♣

*University of North Carolina, Greensboro, dan.t.rosenbaum@gmail.com ♣University of North Carolina, Greensboro, chrisruhm@uncg.edu

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Family Expenditures on Child Care*

Dan T. Rosenbaum and Christopher J. Ruhm

Abstract

This study examines the child care "expenditure share," defined as child care expenses divided by after-tax income. We estimate that the average child under six years of age lives in a family that spends 4.9 percent of after-tax income on child care. However, this conceals wide variation: 63 percent of such children reside in families with no child care expenses and 10 percent are in families where the expenditure share exceeds 16 percent. The proportion of income devoted to child care is typically greater in single-parent than married-couple families but is not systematically related to a constructed measure of socioeconomic status. One reason for this is that disadvantaged families use lower cost modes and pay less per hour for given types of care. The expenditure share would be much less equal without low cost (presumably subsidized) formal care focused on needy families, as well as government tax and transfer policies that redistribute income towards them.

KEYWORDS: child care, expenditure share, parental employment, work-family balance

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How much of their income do parents spend on child care for their young children? To our knowledge, this study provides the first comprehensive analysis of this seemingly simple question.[1] There are two main reasons why we know so little about what we call the child care "expenditure share". First, it is difficult to compile data that simultaneously provides accurate information on child care expenses and family incomes. Second, conceptualizing the expenditure share is surprisingly complex, since parental employment and child care use are closely linked (Hofferth et al., 1991 and Smith, 2002), with the result that parents (particularly mothers) who work typically utilize more non-parental care than those who do not.[2] One implication is that employment often raises both the numerator (expenses) and the denominator (family incomes) in the expenditure share equation. The positive relationship between child care spending and family income is even stronger for female-headed households, where labor supply is a greater determinant of both total income and child care use. Other complicating issues are related to the measurement of income (e.g. gross versus disposable and family versus household income), permanent versus transitory components of income and expenses, and possible changes in family composition over time.

Our analysis addresses five questions. First, what is the average share of income spent on child care for children under six years old? Second, how does this share differ across types of families? Third, do child care costs increase or decrease measured income inequality? Fourth, how would expenditure share inequality change if the modes or costs of care became more similar across groups than they currently are? Finally, do government tax/transfer policies and child care subsidies exacerbate or mitigate differences in the expenditure share? We should emphasize that our analysis provides a snapshot of spending patterns given the current choices made by families or under a set of counterfactuals where these choices remain unchanged. Thus, we do not fully incorporate the endogeneity of these decisions to changes in incomes or relative prices.

We utilize data from the 1996 panel of the Survey of Income and Program Participation (SIPP), which contains detailed information on both child care expenses and income. Our child care data comes from the wave 10 topical module covering March through June 1999; our income data comes from the corresponding core survey providing information on average incomes in the preceding four months. We also use data from the March Current Population Survey (CPS) to construct a measure of socioeconomic status (SES) that is based

1 Related research has previously been conducted by Hofferth et al. (1991), Anderson and Levine (2000), Smith (2002), and Giannarelli and Barsimantov (2002), as detailed below.

2 Child care expenses also influence parental employment. Anderson and Levine (2000) and Meyers et al. (2004) review the related research and conclude that most estimates of the elasticity of maternal employment with respect to child care expenses cluster around -0.3 or -0.4.

on predicted income percentiles and use the National Bureau of Economic Research (NBER) TAXSIM program to estimate taxes for our SIPP families.

The expenditure share that we focus upon is calculated for *all* families with young children, whether or not they use paid child care. We estimate that the average child under the age of six lives in a family that spends 4.9 percent of after-tax income on such care. However, 63 percent of these children reside in families with no (non-immediate family) child care expenses, while 10 percent are in families where the expenditure share exceeds 16 percent. We do not claim that the unconditional average is always the most appropriate. In some applications it may be more useful to look at expenditure shares conditional on use of either some (non-immediate family) child care or positive amounts of paid care. For example, this might be desirable when considering the affordability of non- subsidized center-based care for different types of families. However, the unconditional measures provide an overall picture of child care spending in relation to income, and highlight the importance of family or unpaid sources of care that we believe have previously received too little attention. It is also straight-forward to calculate conditional means from overall expenditure shares, whereas the converse is not always true.[3]

Our analysis reveals several other interesting findings. First, a large portion of differences in expenditure shares are related to family characteristics. For example, children living with married parents are in families where the mean expenditure share is 3.9 percent; this compares to 7.4 percent for families with an absent spouse or a never married parent. Second, income inequality is somewhat greater when measured net of child care expenses than when these costs are not taken into account (the Gini coefficient rises from 0.398 to 0.406). However, the expenditure share is not systematically related to SES, as proxied by predicted incomes. The reason is that disadvantaged families use lower cost modes and pay less per hour for given types of child care. Equalizing costs per hour (and presumably differences in the quality of care received) would dramatically increase the expenditures of disadvantaged families. We point this out not as a policy prescription, but to highlight differences in child care use across SES groups. Finally, our evidence suggests that government policies operate to reduce inequality in the child care expenditure share. This primarily reflects redistribution due to tax policies and the Earned Income Tax Credit. Transfer payments have smaller effects.

1. Previous Evidence on Expenditure Shares

Prior research provides some information on the child care expenditure share. Using the 1990 National Child Care Survey, Hofferth et al. (1991) report that

3 For instance, the unconditional mean can not be calculated when the analysis sample is restricted to families using paid child care.

expenses, for families with children under five and who pay for child care, are 10 percent when the mother is employed and 6 percent when she is not. They also provide evidence that expenditure shares decline with income. However, as shown below, there is an important role for care that is provided free of charge, making it difficult to use these statistics to determine the expenditure share for all families, as opposed to just those paying for care.[4]

Anderson and Levine (2000) and Casper (1995) compute expenditure shares from the 1993 (and earlier) panels of the SIPP that are limited to families with caregivers who are working or in school.[5] Anderson and Levine estimate that child care expenses are 7 percent of income for such families with children under six and employed mothers paying for care; Casper obtains a corresponding expenditure share of 7.6 percent for families with children under five years of age. However, neither study accounts for free child care or families with nonworking mothers. These exclusions are important – comprising 68 percent of all children in the sample we analyze.

Giannarelli and Barsimantov (2000) provide the most comprehensive previous study of the expenditure share. Using the 1997 National Survey of American Families (NSAF), they find that families with children under 13 pay 9.2 percent of their income for child care. However, the analysis is again limited to paid care and families with an employed caregiver. Also, the NSAF does not break down child care costs by mode.

The "Who's Minding the Kids?" reports from the U.S. Census Bureau use the 1996 SIPP panel to examine how the expenditure share varies by group. Smith (2002) estimates that child care expenses are 6.6 percent of income for families making such payments, and considerably higher for corresponding low-income families. But once again, describing the expenditure share is not the primary focus of this analysis, and it is extremely difficult to ascertain how the share differs across all types of families. To reiterate, free care is important and studies neglecting to consider it miss out on one of the primary determinants of differences in the cost of care.

Our study extends the previous literature in five ways. First, we calculate the expenditure share for all families with young children, not just those with employed parents. Second, we carefully consider both paid and free child care. Third, we examine differences in modes and costs per mode of care. Fourth, we compute expenses as a fraction of disposable rather than gross income (by removing taxes and adding in transfer payments). Fifth, we emphasize the distribution of the expenditure share and not just its average value.

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4 Meyers et al. (2004) attempt to do so by combining findings from several tables in Hofferth et al. (1991).

5 Hofferth (1996) and Blau (2001) provide additional analyses of the statistics reported by Casper.

2. Data

The U.S. Census Bureau's Survey of Income and Program Participation is a multistage-stratified sample of the U.S. civilian noninstitutionalized population that provides extensive information on child care use and expenditures and income. SIPP households are interviewed every four months (each interview is a wave) for periods of up to four years. The survey is built around detailed monthly "core" questions on labor force activity, program participation and sources of income. These are supplemented by wave-specific "topical modules".[6] We use a topical SIPP module on child care use, wave 10 of the 1996 panel, covering the period from March 1999 through June 1999.[7] Our sample contains 4,524 families with 5,777 children under the age of six.[8] A primary caregiver (typically the mother) is designated for each family.[9]

We define the "child care expenditure share" as expenditures on child care obtained from non-immediate family members divided by after-tax income. The SIPP topical module contains extremely detailed questions on child care costs.[10] Variables for usual weekly costs are separately provided for each of the five youngest children (under six) and for each of seven non-immediate family child care arrangements (grandparent, other relative, family day care, child care center, pre-school/nursery school, Head Start, and other non-relative).[11] Data for both the working and non-working caregivers is collected in the 1996 SIPP. Despite this highly detailed information, there is some remaining uncertainty about child care expenses. Importantly, in cases where a voucher covers all or part of the cost of care, we cannot be certain whether families report total payments to the provider, or only on their own out-of-pocket costs (net of the voucher amount). Our assumption is that they supply information on the latter. If the indicated spending also includes a portion of the value of the voucher, calculated expenditure shares will be larger than our conceptual measure. We also do not have data on in-kind transfers that might be offered to relatives (or other providers) in exchange for child care services, the value of which could be substantial.

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6 Further information on the SIPP can be obtained at: http://www.sipp.census.gov/sipp.

7 Similar child care data are collected in wave 4 of the 1996 SIPP. Earlier SIPP panels collect child care information that is limited to caregivers who are working or in school. The SIPP also includes data on children aged 6 to 14.

8 The 1996 SIPP panel contains 36,700 households, most without children of the designated ages..

9 The primary caregiver is the mother in married-couple families and the sole parent in single parent families. Grandparents and other relatives can also be designated as the primary caregiver.

10 This detail may have hindered the efforts of previous researchers to compute child care costs using the 1996 panel of the SIPP. For example it is necessary to read in 105 variables in order to compute total child care costs (for children five years and younger), child care hours per week, and weekly child care hours when the primary caregiver is working.

11 Also included are total hours of care and hours while the caregiver was working, place of care, and similar variables for care by immediate family members (the other parent and older siblings).

Income data come from the core questionnaire and are measured as a monthly average over the four months prior to the survey. [12] Total family income includes earnings, government transfers (Temporary Assistance to Needy Families, Unemployment Compensation, and Social Security), non-government transfers (e.g. alimony and child support payments), and unearned income (dividends, property income, and pensions). [13]

We also estimate the taxes paid by each family using TAXSIM, which has been developed by the National Bureau of Economic Research. [14] In doing so, we break families into tax-filing units (single, head of household, married filing jointly), compute income (federal and state) and payroll (Social Security and Medicare) taxes for each tax-filing unit, and sum these to get total taxes. TAXSIM is sophisticated in its treatment of different types of income (e.g. earned versus Social Security income), and in allowing child care expenses to be included in child care credit calculations. [15]

When calculating the child care expenditure share, most of our analysis assumes a minimum after-tax family income of $314 per month (corresponding to the 5th percentile in our sample) and caps the expenditure share at a maximum of 50 percent. We make these adjustments for several reasons. First, since incomes are averaged over only a four month period, very low (and zero) measured incomes will often represent reporting errors or transitory reductions (e.g. during periods of temporarily reduced employment). Second, families with incomes below the 5th percentile may be able to afford child care because they reside in households with income support provided by other adults. [16] Although a full investigation of the distinction between family and household incomes is beyond the scope of this analysis, we provide some testing of the sensitivity of the results to our use of the family as the basic economic unit. Third, the expenditure share is capped because it seems unlikely that many families would be able to spend more than half their income on child care expenses for extended periods.

[12] We use a four-month average in order to minimize the effects of transitory fluctuations.

[13] Related non-household heads are typically part of the primary family in the SIPP, except when they are married or have non-adult children.

[14] For more information on TAXSIM, see Feenberg and Coutts (1993) and TAXSIM (2003).

[15] Data limitations require several simplifying assumptions. Most importantly, we assume that all tax-filing units take the standard deduction. We also assume that only child care expenses for family day care, child care centers, pre-school/nursery schools, and Head Start are claimed for tax purposes. To compute annual income and child care expenses, we multiply our monthly average incomes by twelve and weekly child care expenses by 52. Maine and Vermont are combined into one state group, in the SIPP, as are North Dakota, South Dakota and Wyoming. State income taxes for these states were computed as a population-weighted average for families residing in the specified group of (two or three) states.

[16] Families with monthly incomes below $314 live in households with average monthly incomes of $1,670.

We often compare results for families with different predicted incomes, using the latter as a proxy for socio-economic status (SES). When doing so, predicted income is estimated using data from the 1998 through 2002 March Current Population Survey (CPS), controlling for gender, age, education, race/ethnicity, and state of residence of the primary caregiver, as well as second-level interactions between these variables. [17] Children in the SIPP are ranked by predicted family incomes, based upon characteristics of their primary caregiver and the CPS model estimates, and then grouped into six categories representing the: 0-10th, 10-25th, 25-50th, 50-75th, 75-90th, and 90-100th percentiles.[18] Compared to grouping children by a single characteristic (e.g. education of their mother), this method has the advantage of simultaneously accounting for a large number of determinants of SES.

For ease of exposition, we use several conventions throughout the paper. First, we sometimes refer to caregivers (who are occasionally grandparents or other guardians) as "parents" but in all cases are talking about all primary caregivers. Second, we split the sample into three marital status groups – married with spouse present, spouse absent (married with spouse absent, widowed, divorced, or separated) and never married, and refer to the latter two groups as "single parents", even though it is possible that these caregivers cohabit. Third, our results provide nationally representative estimates for children aged 0 through 5.[19] While we occasionally discuss findings for "caregivers" or "families", these technically refer to children under the age of six in those families. Fourth, except where noted, reported child care hours and costs are for arrangements outside of the immediate family (which includes the other parent and siblings). Fifth, all child care costs and incomes are measured as monthly, while child care hours generally are reported as weekly. To compute monthly child care costs, we multiply weekly child care costs by 52 weeks and divide by 12 months.

3. Use and Cost of Child Care

Care of young children by persons outside the family is common but not universal. As detailed in Table 1, children under six years of age reside in

[17] The age groups are <20, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49 and 50+ individually and <28, 28-34, and 35+ for the interactions. The educational groups include high school dropout, high school graduate, some college but no bachelor's degree, bachelor's degree, and master's degree or higher. The last two educational groups are combined for the interactions. The race/ethnicity groups are white non-Hispanic, black non-Hispanic, other non-Hispanic, and Hispanic. Each state, except those grouped in the SIPP, are entered individually, but the states are grouped into five regions for the interactions. The CPS income variable is equivalent to that used in the SIPP, prior to deducting taxes.

[18] Children with predicted incomes at the category dividing point are placed in the lower group (e.g. children at the 10th percentile are put in the 0-10th and not the 10-25th percentile).

[19] These are obtained by multiplying SIPP person weights by the caregiver's number of children.

families where an average of 25 hours of child care per week is supplied outside the immediate family at a cost of $135 per month, with external child care used by roughly three-fifths of families. This care costs an average of $1.24 per hour, divided between that generally provided very cheaply by grandparents or other relatives (averaging $0.31 per hour) and that offered at an average cost of around $2 per hour in child care centers, pre-schools, or other less formal settings (with the exception of the virtually free care supplied by Head Start). These differences explain why two-fifths of child care is supplied free of charge, including three-quarters of that by grandparents or other relatives, versus around one-fifth of hours by non-relatives in informal settings and only one-tenth to one-eighth of care in family day care facilities, centers, and preschools.[20]

Ten of the 25 hours of average weekly non-immediate family child care are provided by grandparents or other relatives, 8 hours by child care centers or pre-schools, 7 hours by family day care centers or non-relatives in informal settings, and less than 1 hour through the federal Head Start program (although this is probably an undercount).[21] In addition, an average of six hours per week of supervision is provided by parents other than the designated caregiver and less than one hour weekly by siblings.[22] The remainder of our analysis focuses exclusively on care by non-immediate family members and the related discussion refers only to these sources of care.

The amount and costs of child care vary substantially across types of families. For instance, single parent families use 50 percent more care than those with married parents (33 vs. 22 hours per week) but utilize much cheaper sources ($0.80 vs. $1.50 per hour) and, as a result, spend 20 percent less per week ($114 vs. $143) on it. Similarly, families where the caregiver is a non-Hispanic white use slightly fewer hours of child care than minorities (24 vs. 27 hours per week) but pay more both per hour ($1.49 vs. $0.87) and per month ($155 vs. $100) for

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20 These figures represent lower-bounds on the percentage of free child care because none is assigned in cases where families receive some hours at no charge but pay for other hours of care within a given mode (e.g. if a grandparent provides some portion of care for free and is paid for the rest). We suspect that the resulting understatement is small.

21 In Table 1 we are estimating that approximately 200,000 children are in Head Start in a given month. In the 1999 fiscal year, 826,016 children were enrolled in Head Start at a cost of $4.7 billion (U.S. Department of Health and Human Services, 2000). Part of the undercount is due to our time period stretching into the summer months, when Head Start programs are not in session. However, we suspect that a more important reason is that most Head Start children may be counted in some other modes of care. For example, we estimate that there are nearly 600,000 three and four year-old children in families with less than the median income (about $2,500 per month) receiving free or less than a dollar per hour care in child care centers, pre-schools, or nursery schools. Many of these children may be in Head Start.

22 For immediate family members (siblings and the other parent), SIPP only hours of care while the primary caregiver is working or in school.

these services. By contrast, more educated parents use both large amounts and expensive sources of care, and so have relatively high expenditures.

The child care expenditure share depends on the type and cost of care, as well as on the family incomes, and so represents a complicated interaction of a

Table 1:
Decomposing Child Care Hours and Costs

Type of Child Care/ Caregiver Characteristic	Hours Per Week	Percent Using	Dollars Per Hour	Dollars Per Month	Percent Receiving Free Care
Mode of Child Care					
Non-Immediate Family	25.0	60.2%	$1.24	$135	39.0%
Relative/Grandparent	10.0	29.8%	$0.31	$13	76.3%
Non-Relative	3.4	11.4%	$1.77	$26	18.0%
Family Day Care	3.4	8.4%	$1.77	$26	10.1%
Center/Pre-School	7.9	22.7%	$2.01	$69	12.4%
Head Start	0.3	1.2%	$0.13	$0	82.3%
Immediate Family	6.5	22.1%			
Other Parent	5.9	19.0%			
Siblings	0.6	4.0%			
Use and Cost of Non-Immediate Family Child Care By Caregiver Characteristics					
Non-Hispanic White	24.1	61.1%	$1.49	$155	34.3%
Non-White/Hispanic	26.6	58.9%	$0.87	$100	46.3%
Spouse Present	21.9	56.0%	$1.50	$143	32.7%
Spouse Absent/Never Married	32.9	71.3%	$0.80	$114	50.1%
High School Dropout	20.2	46.0%	$0.72	$63	52.5%
High School Graduate	24.2	58.9%	$0.95	$99	44.1%
Beyond High School	27.0	65.5%	$1.51	$177	33.3%

Source: Data are from wave 10 of the 1996 panel of the Survey of Income and Program Participation (SIPP), covering the period from March through June 1999.

Standard errors: Standard errors range between 0.0-0.5 hours/week for use of care, 0.2%-0.7% for probability of using the specified type of care, $0.03-$0.07 for cost/hour, $0-$4 for cost/month, and 0.9%-1.7% for the probability of free care (except for Head Start where it is 5.8%) for all children. Corresponding standard errors for all non-immediate family child care among the specified population sub-samples range from 0.5-1.1 hours/week, 0.9%-1.8%, $0.04-$0.06/hour, $5-$6/week, and 1.0%-2.5%.

Note: Sample includes 4,524 caregivers of children aged 0 through 5. Observations are weighted using SIPP person weights multiplied by the number of children aged 0 through 5, to provide nationally representative estimates for children of these ages. The use of specified modes sums to over 100 percent because some families use multiple types of child care. Child care hours for the immediate family are only for when the caregiver is working or in school. See the text for additional details.

variety of factors that often move in different directions. Groups using smaller amounts of care often utilize more expensive sources and so have greater total expenditures. These same groups (e.g. married couple families) also frequently have relatively high incomes so that it is not obvious, *a priori*, which families have the highest expenditure shares. As mentioned, this issue is even more complicated because employment and child care use are jointly determined and because there are likely to be substantial within-group differences in all of these factors. We explore these issues below.

4. How Large is the Child Care Expenditure Share?

As shown on the first row of Table 2, the average 0-5 year old child is in a family paying 4.9 percent of their disposable income for child care.[23] This average, however, conceals enormous diversity. Fully 63 percent of these children live in families with no expenses. Conversely, the average expenditure share for families in the upper 10 percent of the distribution is nearly 30 percent .[24] Notice that an absence of child care costs does not imply that no care is used – 23 percent of children are in families who utilize only free sources of care.

As discussed, these expenditure shares are not directly comparable to those obtained in previous analyses, because our measure is child-based and is calculated for all children, whether or not their mothers work or use paid care. By contrast, prior investigations generally used family-based measures, calculated expenditure shares only in cases where paid care was used, and frequently further conditioned on maternal employment. For instance, Smith (2002), using wave 4 of the 1996 SIPP, reports that in families with at least one child under five who pay for care, expenditures average 8.9 percent of pre-tax income. In our sample, the analogous statistic is 7.5 percent, which may be slightly smaller because we exclude child care expenses incurred for 6-14 year olds.

As mentioned, Anderson and Levine report average child care expenditures equal to 7.7 percent of income and Giannarelli and Barsimantov (2000) an average expenditure share of 9.2 percent, in both cases for working

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[23] Calculation of the average expenditure share is somewhat sensitive to the treatment of the small number of children in families with very high shares, usually occurring because of low average incomes during the four month period over which these are calculated. Fewer than 2 percent of children are affected by the 50 percent cap on the expenditure share. If this maximum were raised to 75 percent (100 percent) the average share would increase to 5.2 (5.3) percent. There is no effect on the lower 98 percent of the expenditure share distribution.

[24] The 75th, 90th, and 95th percentiles of the expenditure share distribution are 5.9, 16.3, and 25.3 percent. When using household rather than family incomes as the denominator of the expenditure share equation, the average share falls to 4.4 percent and the 75th, 90th, and 95th percentiles to 5.5, 14.4, and 22.0 percent. Thus, the estimates only seem sensitive to using the family rather than household as the true economic unit at the top of the distribution.

Table 2:
Sample Distribution of the Child Care Expenditure Share and Its Components

Cost Component	Sample Mean	Expenditure Share Percentile			
		0-63	63-75	75-90	90-100
Child Care Expenditure Share	4.9% (0.1%)	0% (0%)	3.1% (0.1%)	10.1% (0.1%)	29.7% (0.5%)
Monthly Child Care Costs	$135 ($4)	$0 ($0)	$145 ($6)	$365 ($7)	$624 ($20)
Weekly Child Care Hours	25.0 (0.5)	12.5 (0.5)	29.1 (1.1)	47.5 (1.0)	65.1 (1.8)
Monthly Family Income	$3,060 ($39)	$2,708 ($47)	$4,757 ($156)	$3,706 ($65)	$2,268 ($84)

Source: Data are from wave 10 of the 1996 panel of the SIPP.
Note: This table displays full sample averages for the various cost components (column 2) and corresponding means conditional on being in the specified expenditure share percentile range (columns 3-6). Standard errors are in parentheses. Here and later tables, child care costs and hours refer to care from non-immediate family members. Monthly family income is the average from all sources (earned and unearned) for the entire family over the previous four months, less estimated monthly income (state and federal) and payroll taxes. The child care expenditure share is calculated as total child care costs divided by total family income and capped at a maximum of 50%. See Table 1 and the text for additional details.

caregivers who use paid care. In our analysis, the average expenditure share is 13.0 percent when limiting the sample to the 32 percent of children with working caregivers who pay for child care. Our larger figure may be explained in several ways. First, earlier studies put pre-tax income in the denominator, whereas we use (generally lower) incomes net of taxes and transfer payments. Second, Giannarelli and Barsimantov included 6 to 13 year olds in their analysis, for whom child care expenses are generally lower than for younger children. Finally, Anderson and Levine (2000) only have data on primary and secondary care arrangements, with expenses capped at a maximum of $140 per week.

Perhaps the most noteworthy finding in Table 2 is the remarkable concentration of child care expenditure shares. Families in the upper 10 percent of the distribution pay an average $624 per month for care, versus $80 monthly for the other 90 percent of families. Yet, these high expenditure share families have disposable incomes of just $2,268 per month, lower than the $3,150 for the other 90 percent. Part of the reason for this difference is that 40 percent (versus 15 percent) of caregivers in this group are working single parents.

Table 3:
Sample Average Characteristics By Child Care Expenditure Share and Its Components

Caregiver Characteristic	Expend-iture Share	Monthly Child Care Costs	Weekly Child Care Hours	Monthly Family Income	Sample Size
Full Sample	4.9%	$135	25.0	$3,060	4,524
White	4.8%	$141	23.7	$3,265	3,652
Black	6.0%	$115	33.0	$2,023	655
Other Nonwhite	2.5%	$85	20.1	$3,109	217
Hispanic	4.7%	$90	22.1	$2,231	775
Spouse Present	3.9%	$143	21.9	$3,712	3,150
Spouse Absent	7.9%	$134	35.8	$1,599	569
Never Married	7.0%	$101	30.9	$1,219	805
High School Dropout	3.9%	$63	20.2	$1,599	780
High School Graduate	4.6%	$99	24.2	$2,408	1,386
Some College	5.2%	$132	26.3	$3,112	1,349
College Graduate	5.4%	$234	27.8	$4,957	1,009
1 Child (Aged 0-5)	4.1%	$105	19.3	$2,937	3,404
>1 Child (Aged 0-5)	5.9%	$176	33.0	$3,233	1,120
Youngest Child Aged 0-2	5.3%	$145	27.0	$2,972	2,413
Youngest Child Aged 3-5	4.3%	$120	22.0	$3,189	2,111
Lives in Northeast	4.7%	$139	22.2	$3,360	785
Lives in Midwest	5.0%	$135	24.7	$3,098	1,065
Lives in South Atlantic	6.0%	$155	27.5	$3,117	723
Lives in South Central	4.6%	$121	28.2	$2,712	856
Lives in West	4.3%	$128	23.2	$3,031	1,095

Source: Data are from wave 10 of the 1996 panel of the SIPP.
Note: See note on Table 1. The "Spouse Absent" category includes currently married persons whose spouse is absent as well as those who are divorced, separated, or widowed. See Tables 1 and 2 and the text for additional details.

The child care expenditure share and its components differ substantially, and in mostly predictable ways, with the demographic characteristics of the primary caregiver. Table 3 stratifies the sample by race/ethnicity, marital status, education, geographic location, number of children, and age of the youngest child. As mentioned, the expenditure share is lower in married-couple families (3.9 percent) than where the caregiver has never been married (7.0 percent) or the spouse no longer lives with the child (7.9 percent). Average expenditure shares

are also relatively large in families with multiple young children (5.9 percent) and in black families (6.0 percent), but not for other minorities. Interestingly, the share rises monotonically with the education of the caregiver: from 3.9 percent for high school dropouts to 5.4 percent for college graduates. This reflects the somewhat higher child care hours and much greater costs for the most educated group, and occurs despite their high incomes. By contrast, the high expenditure shares of single parent families reflect low incomes, with particularly long hours being partially offset by the use of cheap sources of care.

There is also substantial variation in the distribution of the child care expenditure share within groups (see Table 4). For instance, almost four-fifths of children with a high school dropout caregiver are in families with no child care costs, compared to under half of those where the caregiver is a college graduate; however, the 90th percentile of the expenditure share is similar (15.0 percent versus 15.9 percent). Conversely, relatively high average expenditure shares for children with black caregivers or in single parent families result from increased costs at the top of the distribution (as indicated by the 75th and 90th percentiles), with little difference in the fraction of families incurring positive expenses.

Many of the differences in child care expenditure shares highlighted in Tables 3 and 4 reflect common influences of factors that vary in similar ways across sub-samples. For instance, since black children have relatively high probabilities of being raised in single parent families, some of the observed racial differences could result from disparities in marital status. With this in mind, Table 5 presents partial correlations between demographic factors and components of the expenditure share, after controlling for other observable characteristics. The dependent variable in the first column is the expenditure share. Since shares are restricted between 0 and 1, this equation is estimated as a fractional probit model (Papke and Wooldrige, 1996). The second and third columns present results from binary probit models for dichotomous outcomes indicating any child care costs and the expenditure shares exceeding the 90th percentile (16.3 percent). For these nonlinear models, the table presents estimated marginal effects with other covariates evaluated at the sample means. Robust standard errors are displayed throughout, calculated assuming independence for children across but not within families. The final three columns present OLS results for monthly child care hours, the natural log of child care costs and the log of family income.

The econometric estimates confirm many of the previously described patterns. Single parent families have relatively high expenditure shares, as do those with highly educated parents and large numbers of young children. Single

Table 4:
Distribution of the Child Care Expenditure Share Within Groups

Caregiver Characteristic	Average Expenditure Share	% With No Child Care Costs	Expenditure Share Percentile		
			50th	75th	90th
Full Sample	4.9%	62.9%	0%	5.9%	16.3%
White	4.8%	62.1%	0%	5.9%	15.8%
Black	6.0%	63.6%	0%	7.1%	24.6%
Other Nonwhite	2.5%	75.7%	0%	0%	8.9%
Hispanic	4.7%	73.3%	0%	2.5%	17.7%
Spouse Present	3.9%	62.4%	0%	5.5%	12.9%
Spouse Absent	7.9%	61.5%	0%	10.9%	29.1%
Never Married	7.0%	65.9%	0%	6.1%	28.9%
High School Dropout	3.9%	78.9%	0%	0%	15.0%
High School Graduate	4.6%	68.0%	0%	4.8%	16.5%
Some College	5.2%	60.1%	0%	7.1%	16.8%
College Graduate	5.4%	48.5%	6.8%	7.9%	15.9%

Source: Data are from wave 10 of the 1996 panel of the SIPP.
Note: See Tables 1 and 2 and the text for additional details.

parents appear to be particularly concentrated among those with expenditure shares above the 90th percentile, even accounting for other demographic characteristics, a finding hinted at in the earlier tables. This occurs because they use relatively large amounts of child care but have low incomes. Characteristics associated with high expenditure shares are usually positively related to the probability of having some child care expenses or being above the 90th percentile; however, there are exceptions. For example, as age of the youngest child in a family increases, the family is more likely to have child care costs, but less often have an expenditure share above the 90th percentile. A noteworthy finding is that many of the previously observed differences between white and black children disappear or become insignificant with the inclusion of controls for other covariates.

The last two columns of Table 5 demonstrate that the numerator and denominator of the expenditure share – child care costs and family income – often move together. For each statistically significant coefficient in the expenditure share equation, except for *other nonwhite*, costs and income move in the same direction. Marital status and caregiver education or age more strongly affect

Table 5:
Econometric Estimates of the Correlates of the Child Care Expenditure Share

Regressor	Expenditure Share	Any Child Care Costs	Expend. Share >90th Percentile	Monthly Hours	Log Monthly Cost	Log Family Income
	(1)	(2)	(3)	(4)	(5)	(6)
Age	-0.0010	-0.0033	-0.0032	0.8797	0.0058	0.0211
	(0.0003)**	(0.0014)*	(0.0008)**	(0.6413)	(0.0060)	(0.0019)**
Female	0.0091	0.0006	0.0245	1.0601	0.0417	-0.0676
	(0.0104)	(0.0500)	(0.0233)	(14.4221)	(0.1695)	(0.0776)
Black	-0.0035	-0.0245	-0.0104	8.4272	-0.1003	-0.0266
	(0.0047)	(0.0270)	(0.0132)	(9.0049)	(0.0931)	(0.0303)
Other Nonwhite	-0.0196	-0.1387	-0.0432	-2.2822	0.0802	-0.1327
	(0.0052)**	(0.0331)**	(0.0184)*	(13.0980)	(0.1312)	(0.0523)*
Hispanic	0.0057	-0.0500	0.0270	17.6090	0.1782	-0.1232
	(0.0055)	(0.0246)*	(0.0160)	(9.4725)	(0.0825)*	(0.0320)**
Spouse Absent	0.0558	0.0632	0.1565	50.9984	-0.0039	-0.7512
	(0.0097)**	(0.0287)*	(0.0260)**	(10.4484)**	(0.1001)	(0.0348)**
Never Married	0.0402	0.0453	0.1162	39.6368	-0.2356	-0.8639
	(0.0077)**	(0.0275)	(0.0222)**	(9.6469)**	(0.1060)*	(0.0344)**
High School Dropout	-0.0136	-0.1124	-0.0241	-2.2290	-0.2810	-0.2715
	(0.0053)*	(0.0256)**	(0.0137)	(10.5952)	(0.1489)	(0.0335)**
Some College	0.0121	0.0896	0.0193	1.9391	0.0749	0.1516
	(0.0045)**	(0.0219)**	(0.0135)	(7.8450)	(0.0772)	(0.0256)**
College Graduate	0.0266	0.2266	0.0412	12.7563	0.3193	0.4423
	(0.0055)**	(0.0248)**	(0.0178)*	(9.3808)	(0.0764)**	(0.0308)**

# Children Aged 0-5	0.0126	0.0247	0.0401	85.6190	0.1657	0.0243
	(0.0035)**	(0.0170)	(0.0087)**	(7.9220)**	(0.0635)**	(0.0228)
Age Youngest Child	-0.0015	0.0200	-0.0087	-5.8128	-0.0722	0.0294
	(0.0011)	(0.0055)**	(0.0033)**	(1.8813)**	(0.0199)**	(0.0068)**
Midwest	0.0014	0.0516	-0.0040	6.2491	-0.1065	-0.0321
	(0.0050)	(0.0264)	(0.0147)	(9.4538)	(0.0907)	(0.0326)
South Atlantic	0.0115	0.0857	0.0126	14.7972	-0.0604	-0.0047
	(0.0063)	(0.0299)**	(0.0177)	(9.9191)	(0.1027)	(0.0361)
South Central	-0.0023	0.0121	-0.0142	34.5063	-0.0187	-0.1022
	(0.0054)	(0.0282)	(0.0152)	(11.5303)**	(0.0988)	(0.0333)**
West	-0.0007	0.0317	-0.0108	12.3556	-0.1067	-0.0102
	(0.0052)	(0.0270)	(0.0148)	(10.1576)	(0.0979)	(0.0327)
Sample Size	4524	4524	4524	2734	1648	4524

* for $P < 0.05$, ** for $P < 0.01$.

Source: Data are from wave 10 of the 1996 panel of the SIPP.

Note: Estimation is by fractional probit in the first column, binary probit in columns 2 and 3, and OLS in columns 4 through 6. Observations are weighted using SIPP child weights (described in Table 1). The coefficient estimates give the predicted effect of a marginal change in the explanatory variable (with other regressors evaluated at their variable means for the fractional probit and probit models). Robust standard errors, estimated assuming that observations are independent across but not within families, are shown in parentheses. See Tables 1 and 2 and the text for additional details.

family income than child care costs, while the number of preschool children has a larger effect on expenses. We explore this interrelationship between costs and income in greater detail below by examining how the expenditure share and its components differ across SES groups.

5. Do Child Care Costs Increase Inequality?

The issue of income inequality has received a great deal of attention in recent years, partly because of its sharp rise during the 1980s and early 1990s after several decades of decline.[25] The growth of income inequality can be traced, in large part, to increasing wage inequality (Katz and Autor, 1999) but also to increases in single motherhood, particularly among less-skilled women (Ellwood and Jencks, 2004). The consequences of the changing wage structure have been partially offset by increases in women's labor force participation (U.S. Bureau of the Census, 2001; Mishel, Bernstein, and Schmidt, 2001), raising the question of whether child care costs mitigate or exacerbate inequality.

We address this issue by comparing inequality in family income with and without accounting for child care costs. The results of this exercise, presented in Table 6, suggest that inequality modestly increases when child care expenses are subtracted from disposable income. For example, the Gini coefficient rises from 0.398 to 0.406 and the ratio of incomes at the 90th and 10th percentiles of the distribution (the 90/10 ratio) increases from 7.78 to 8.52. Similarly, the 50/25 and 25/10 ratios grow from 1.67 and 2.08 to 1.71 and 2.23. The top panel of the table reveals that the increase in inequality occurs primarily because of disproportionately large reductions in net incomes at the bottom of the distribution (e.g. 13 percent at the 10th percentile versus less than 5 percent at the 90th percentile), while median incomes are relatively unaffected (falling just 4 percent), so that there is little change in the 90/50 or 75/50 ratio.

These results refer to families with young children. If such families have relatively low incomes, as seems likely, the preceding calculations will understate the rise in inequality resulting from netting out child care expenses.[26] On the other hand, our main income variable removes taxes and transfer payments, and therefore is not directly comparable to that typically used in prior research. We investigate the effects of government tax/transfer policies below.

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[25] From 1975 to 1993, households in the 90$_{th}$ percentile saw their incomes rise by 21.8 percent, while those in 10$_{th}$ percentile experienced decreases of 2.3 percent (Jones and Weinberg, 2000).

[26] For example, the families in our sample have median annual (pre-tax) incomes of $34,668. The corresponding median income for all U.S. families, in 1999, was $48,950 (U.S. Bureau of the Census, 2001, Table 668).

Table 6:
Income and Inequality With and Without Deduction for Child Care Costs

Income Measure	Average	Income Percentile				
		10th	25th	50th	75th	90th
Monthly Family Income	$3,060	$723	$1,503	$2,509	$3,996	$5,625
Family Income Net of Child Care Costs	$2,925	$631	$1,408	$2,405	$3,837	$5,375
Income Measure	**Gini Coefficient**	**Income Ratio**				
		90/10	**90/50**	**75/10**	**75/25**	**50/10**
Monthly Family Income	0.398	7.78	2.24	5.53	2.68	3.47
Family Income Net of Child Care Costs	0.406	8.52	2.23	6.08	2.72	3.82

Source: Data are from wave 10 of the 1996 panel of the SIPP.

Note: The top panel of the table shows incomes at different points of the distribution, with observations weighted using SIPP child weights (described in Table 1). The bottom panel displays the Gini coefficient and income ratios for specified percentiles of the income distribution. See Tables 1 and 2 and the text for additional details.

6. How Does the Child Care Expenditure Share Differ With Socioeconomic Status?

The remainder of our analysis examines how child care costs and expenditure shares differ with SES. We are interested in determining whether "disadvantaged" families face the double problem of low incomes and high child care spending, or if they have lower expenditure shares because of using less hours or cheaper sources of care.

As previously discussed, we sort families into SES groups by: 1) estimating predicted incomes from CPS data with controls for age, education and race/ethnicity of the primary caregiver, as well as interactions between many of these variables; 2) ranking SIPP children by predicted family income, based upon characteristics of their primary parent; 3) grouping them into six categories representing the: 0-10th, 10-25th, 25-50th, 50-75th, 75-90th, and 90-100th predicted income percentiles. In addition to providing a single summary measure of SES, rather than relying on multiple correlated indicators, this method has the advantage of removing the impact of caregiver-specific variation in work hours likely to be correlated with family incomes and child care use and costs. However, the effects of between-group variation in average employment or child care use will not be removed. For instance, those with high predicted incomes

may have relatively high child care costs because this group is dominated by educated parents who supply relatively large amounts of market labor.

Sample characteristics for the six predicted income categories, summarized in Appendix Table A.1, largely accord with our expectations. Groups with low predicted incomes are dominated by minorities, single-parent families, and less educated caregivers; conversely, whites, married-couple families, and educated caregivers are disproportionately represented among those with high expected incomes. For example, the primary parent of 48 percent of children in the 0-10th percentile is nonwhite, 34 percent are Hispanic, 67 percent have no spouse present, and 69 percent are high school dropouts; corresponding percentages for children in the top decile are 6 percent, 3 percent, 5 percent, and 0 percent .[27] Parents of the latter group work many more hours (68 versus 29 hours), largely due to the presence of a spouse in the family. Conversely, there is much more likely to be a non-parent working adult in the household for the 0-10th than the 90-100th percentile (41 versus 3 percent), with the result that the family provides a much lower share of total household income for the lower SES group (68 versus 99 percent).[28] One implication is that calculating the expenditure share as the ratio of child care costs to household (rather than family) income is likely to result in a smaller figure at the bottom of the predicted income distribution but with little effect for high SES families .[29] This issue, which was briefly touched upon above, represents an important subject for future research.

Table 7 details how the child care expenditure share and its components vary with actual income and our measure of SES. The share falls monotonically with incomes because increases in the latter more than offset rising hours and costs of child care. For instance, child care use care is almost twice as large for families in the top versus the bottom income decile (30.5 vs. 16.4 hours per week) and their monthly child care costs are more than six times as great ($313 vs. $47);

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[27] We also calculated predicted income percentiles using an equation that added controls for marital status, the number of children and selected interactions. The patterns were generally similar to those reported, although (not surprisingly) with an even larger representation of single-parent families in the lower SES groups and slightly less delineation by educational attainment. Patterns fairly similar to those discussed below were also obtained using this alternative prediction equation.

[28] A complication with measuring the expenditure share at the family-level is the treatment of multi-generation households. Family definitions in the SIPP and CPS result in differences in the classification of other adults in the household (such as grandparents). In particular, other adults generally will not count in family income calculations when the family head is not the household head, whereas they will be counted if the family and household head are the same.

[29] However, household incomes remain quite low at the bottom of the predicted income distribution. Also, other adults in the household may have young children of their own, so that the expenditure share for the entire household need not fall. Without a full understanding of intra-household income transfers, it is difficult to interpret an expenditure share measure based upon household incomes.

but these are dwarfed by an almost 30-fold disparity in average incomes ($8,534 vs. $288). A significant portion of the difference is due to the endogeneity between employment and child care use – since job-holding is positively related to both incomes and child care expenses. This can be seen in the lower panel of the table, where the link between predicted incomes and child care use/costs is much less pronounced.

The most striking finding is the *absence* of any consistent pattern between predicted income and the expenditure share. Shares for the 0-10th, 25-50th, and 90-100th percentiles are virtually identical (5.5 or 5.6 percent) and substantially above those for the 25-50th, 50-75th and 75-90th percentiles (4.7, 4.1 and 4.2 percent). The lack of a monotonic relationship results from offsetting increases in actual incomes and child care costs when moving up the distribution. For instance, families in the highest decile spend 1.3 times as much on child care as those in the 25-50th percentile and have incomes that are 1.4 times as high.

The other remarkable feature is the similarity in child care hours across predicted income groups. Although categories with the highest average expenditure shares (the 0-10th, 25-50th, and 90-100th percentiles) also use the most non-family care, these differences are much smaller than disparities in the costs of care. For example, families in the top decile obtain 20 percent more hours of child care per week than those in the 50-75th percentile (27.9 vs. 23.2 hours) but pay over twice as much for it ($269 vs. $129 per month).

Similarity in child care hours across SES groups masks substantial variation in the choice of modes and, largely as a result of this, in the cost of care. Families at the bottom of the predicted income distribution obtain a large proportion of total care from relatives, whereas those at the top mostly use centers, preschools or family day care facilities. For instance, families in the 0-10th percentile obtain almost half of total child care from grandparents or other relatives, compared to less than a fifth of hours for those in the 90-100th percentile. [30] This mostly explains why more than twice as large of a percentage of child care is provided free of charge for the lowest SES decile as for the highest (52 vs. 20 percent).

Families with high predicted incomes not only use more expensive types of care but also pay more within modes.. [31] While it seems likely that this extra spending purchases higher quality care, some costs at the bottom of the SES distribution are probably being reduced by child care subsidies offered by the

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[30] Conversely, the lowest SES decile gets 38 percent of child care from centers, preschools or family day care, compared to 62 percent for the 90-100th percentile.

[31] The top decile spends 133 percent more per hour for center/pre-school care than the 0-10th percentile ($2.75 vs. $1.18), 81 percent extra for family day care ($2.39 vs. $1.32), 66 percent more for informal non-relative care ($2.42 vs. $1.46), and over twice as much for supervision by relatives ($0.63 vs. $0.23).

Table 7:
Expenditure Share and Its Components By Actual and Predicted Family Income

	Actual Family Income Percentile					
Cost Component	**0-10**	**10-25**	**25-50**	**50-75**	**75-90**	**90-100**
Child Care Expenditure Share	6.2%	6.3%	4.9%	4.1%	4.6%	4.4%
Monthly Family Income	$288	$1,152	$1,990	$3,205	$4,716	$8,534
Weekly Child Care Hours	16.4	27.7	23.4	24.1	28.5	30.5
Monthly Child Care Costs	$47	$79	$98	$133	$196	$313
Sample Size	488	706	1,105	1,150	647	428
	Predicted Family Income Percentile					
Cost Component	**0-10**	**10-25**	**25-50**	**50-75**	**75-90**	**90-100**
Child Care Expenditure Share	5.6%	4.7%	5.6%	4.1%	4.2%	5.5%
Monthly Family Income	$1,268	$1,637	$2,294	$3,437	$4,665	$5,570
Weekly Child Care Hours	26.3	24.9	25.9	23.2	23.8	27.9
Weekly Care Hours by Relatives	12.8	14.2	10.7	9.0	7.4	5.1
Monthly Child Care Costs	$83	$75	$115	$129	$180	$269
Child Care Costs Per Hour	$0.73	$0.70	$1.03	$1.29	$1.75	$2.23
% of Hours of Free Child Care	51.9%	47.8%	40.8%	40.0%	30.5%	20.1%
Sample Size	428	689	1,140	1,161	659	447

Source: Data are from wave 10 of the 1996 panel of the SIPP.
Standard errors: Standard errors range between 0.2%-0.7% for child care expenditure share, $8-$201 for monthly family income, 0.9-1.9 hours/week for weekly child care hours, 0.6-1.2 hours/week for weekly child care hours by relatives, $6-$23 for monthly child care costs, $0.04-$0.10 for child care costs per hour, and 1.7-2.9% for the % of hours of free child care.
Note: The top panel shows results for sub-samples stratified by actual family income. The bottom panel divides the sample by the predicted family income percentile, which is obtained by regressions of total family income on interactions of gender, race, age, education, and region, using data from the 1998 through 2002 March Current Population Survey (CPS). In both cases, SIPP caregivers are divided into the specified percentiles based upon the specified family income variable and sample means are calculated weighting observations by SIPP child weights (described in Table 1). See Tables 1 and 2 and the text for additional details.

government, employers or others. In particular, *non-relatives* provide free care much more frequently to the bottom of the predicted income distribution, as expected if subsidies are targeted towards disadvantaged families. For instance, 19 percent of the center-based care, 12 percent of family day care, and 29 percent

of non-relative care is supplied to the bottom decile without charge, compared to 7 percent of all three modes for the 90-100th percentile.[32]

7. Household Accommodations and Government Policies

The section examines how government policies and household accommodations affect the child care expenditure share. We begin with a brief description of the components of net family income (the denominator of expenditure shares), followed by simulations of expenditure shares under a series a counterfactuals.

Earnings are the largest source of total income for all SES categories, with those of the caregiver being particularly important at the bottom of the distribution: accounting for 51 percent of earnings for the 0-10th percentile and 41 percent for the 10th-25th percentile, compared to 28 and 30 percent among the 75-90th and 90-100th percentiles. [33] Government transfers result in modest redistribution towards disadvantaged families, being responsible for 18 percent of net incomes among the bottom 10 percent (60 percent of this due to welfare) versus less than one percent for the top decile. Such transfers would be large enough to more than pay for the child care expenditures of the bottom half of the SES distribution, if they were targeted to families with high child care expenses. However, most payments are actually received by those without child care costs. Income and payroll taxes cause further (and larger) redistribution, reducing the net incomes of the top two SES groups by an estimated 25 and 28 percent, compared to less than 8 and 4 percent for the bottom two. The modest income reductions for disadvantaged families occur even though (Social Security and Medicare) payroll taxes are approximately proportional to incomes, and are primarily due to relatively federal income taxes for these families, mainly because of the Earned Income Tax Credit (Meyer and Rosenbaum, 2001).[34]

The first row of the Table 8 repeats the information from Table 7, showing that the child care expenditure share remains relatively constant across predicted income categories. The remainder of the table estimates expenditure shares under several alternative scenarios. These counterfactuals assume that families use the same *amount* of child care as in the base case, and examine the effects of variations in government tax/transfer policies (which affect net incomes) or in the type or cost of the care utilized (which affect spending). The simulations do not

32 Families at the bottom of the predicted income distribution similarly are much less likely to pay more than $1 per hour for center-based care, providing a further indication that they disproportionately receive subsidized care: the 0-10th and 10-25th percentiles spend more than $1 per hour for just 44 and 53 percent of center/pre-school hours, compared to over 85 percent for families in the top two predicted income categories.

33 This largely reflects the high share of single parent families among the low SES groups.

34 Federal child tax credits and federal and state child care credits have modest effects on net incomes for all groups. Conversely, the EITC is more targeted towards families with high child care expenses.

account for the substitution towards cheaper types or fewer hours of care expected when costs increase. Nor do they consider the changes in modes that would accompany different policies.

Transfer policies have little effect on estimated child care expenditure shares. The second row of the table shows that removing this source of income would increase shares for the bottom SES decile from 5.6 to 6.1 percent, while having smaller effects on the 10th-75th percentiles and none at all for the top quartile. By contrast, eliminating taxes would scarcely affect the bottom 25 percent but (by increasing disposable incomes) would sharply reduce the expenditure shares of the top half of the distribution. For instance, spending for the 75-90th and 90-100th percentiles would fall from 4.2 to 3.4 percent and 5.5 to 4.3 percent of net income (see the third row of the table).[35]

The SIPP does not provide complete information on subsidized sources of child care. To estimate the effect of eliminating such subsidies (whether from government or private sources), we assume that any child care provided in centers, pre-schools or family day care facilities at a cost of less than $1 per hour is subsidized and replace the actual hourly costs of such care with sample average costs for unsubsidized care from the same source (care costing $1 or more per hour). Results of this exercise, shown in the fourth row of the table, indicate that the removal of subsidies would dramatically raise expenditure shares for low SES families (from 5.6 and 4.7 percent to 8.9 and 6.6 percent for the 0-10th and 10-25th percentiles) and result in substantial increases through the 75th predicted income percentile, while having smaller effects for the top quartile. [36] These results further emphasize the importance of free and low cost sources of care in holding down the expenditure shares of less advantaged families.

Since low SES families use cheaper types of child care and pay less within modes, making patterns of use more similar along either dimension would dramatically increase expenditure share inequality. As illustrated in the fifth row, equalization of the cost per hour within (but not across) modes of care, combined with existing patterns of use, would raise the average expenditure share

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35 These are partial equilibrium effects because we assume that income and payroll taxes would be eliminated without offsetting source of government revenue. Also, as mentioned, we are assuming no behavioral effect due to these changes in government policy.

36 Formal care costing $1 or more per hour is supplied at an average cost of $2.47 per hour. The calculations detailed in the table will understate the effects of removing subsidies if some care costing more than $1 per hour is subsidized. To examine the sensitivity of the findings to this possibility, we recalculated amounts under the assumption that all care in centers, preschools, and family day care facilities costing $1.50 per hour or less is subsidized and with unsubsidized care costing $2.81 per hour (the average cost for care costing over $1.50 per hour). Doing so increased the expected expenditure shares occurring without subsidized formal care, but the differences were not dramatic: average expenditures shares at the 0-10th, 10-25th, 25-50th, 50-75th, 75-90th and 90-100th percentiles were estimated to be 9.6, 7.3, 7.9, 5.7, 4.9 and 6.4 percent.

Table 8:
Child Care Expenditure Shares Under Alternative Counterfactuals

Child Care Expenditure Share Measure	Predicted Family Income Percentile					
	0-10	10-25	25-50	50-75	75-90	90-100
Actual Expenditure Share	5.6%	4.7%	5.6%	4.1%	4.2%	5.5%
Share Without Transfer Income	6.1%	4.9%	5.8%	4.3%	4.2%	5.5%
Share Without Transfer Income or Taxes	6.0%	4.8%	5.5%	3.7%	3.4%	4.3%
Share Without Subsidized Formal Care	8.9%	6.6%	7.2%	5.2%	4.6%	6.0%
Share With Equal Hourly Costs by Mode	9.6%	6.9%	7.3%	4.5%	3.7%	4.2%
Share With Equal Hourly Child Care Costs	12.6%	9.8%	8.2%	4.7%	3.5%	3.3%
Share Without Taxes/Transfers and With Equal Hourly Child Care Costs	14.2%	11.3%	8.8%	4.8%	2.9%	2.6%
Minimum Standard Error	0.6%	0.4%	0.3%	0.2%	0.2%	0.2%
Maximum Standard Error	0.9%	0.6%	0.4%	0.3%	0.3%	0.4%

Source: Data are from wave 10 of the 1996 panel of the SIPP.
Note: Minimum and maximum standard errors for all of the expenditure share measures for the specified percentile group are given the bottom panel. See Table 7 for details on how predicted family income was calculated. Transfer income includes TANF, GA, Food Stamps, Social Security, Unemployment Compensation, Workers' Compensation, SSI, Veteran's Benefits, and other small government programs. Taxes include federal and state income taxes and the employee half of Social Security and Medicare payroll taxes. "Share Without Subsidized Formal Care" assumes that all free or less than a dollar per hour care in centers, preschools/nursery schools, family day care, and Head Start cost $2.47 per hour, the mean cost for unsubsidized formal care. "Share With Equal Hourly Costs by Mode" assumes that hourly costs by mode are the same for all families in the sample, but hours and mode choices differ across families. "Share With Equal Hourly Child Care Costs" assumes that hourly costs are the same for all families, but hours differ across families. See Tables 1 and 2 and the text for additional details.

from 5.6 to 9.6 percent for the 0-10th percentile and from 4.7 to 6.9 percent for the 10-25th percentile; conversely, the share would fall from 4.2 to 3.7 percent for the 75-90th percentile and from 5.5 to 4.2 percent for the 90-100th percentile. If the hourly cost of child care was equalized across as well as within modes, expenditure shares would be 12.6, 9.8, 3.5, and 3.3 percent for the 0-10, 10-25, 75-90, and 90-100th percentiles (see row six).

The last row of Table 8 demonstrates the predicted expenditure shares if hours of child care were unchanged, taxes and transfer payments were eliminated, and all families paid the sample average amount for each hour of care. In this case, the proportion of income devoted to child care would be over twice as high as that actually observed for the 0-10th percentile (14.2 vs. 5.6 percent) and 10-25th percentile (11.3 vs. 4.7 percent), while declining by almost one-third for the 75-90th percentile (from 4.2 to 2.9 percent) and more than half for the highest decile (from 5.5 to 2.6 percent). Families in the 0-10th (10-25th) percentiles would expect to spend over five (four) times as much of their income on child care as the top decile under this scenario.

We examined the sensitivity of our results to the assumption that the maximum expenditure share was 50 percent by re-estimating the results in Table 8 using a ceiling of 30 percent. As expected, expenditure shares fall under all scenarios, particularly for families with lower predicted incomes. However, the qualitative pattern of less equal shares under the counterfactual scenarios remains unchanged. For instance, predicted expenditure shares at the 0-10th, 10th-25th, 75-90th and 90-100th percentiles average 4.6, 4.0, 4.0, and 5.3 percent (rather than 5.6, 4.7, 4.2 and 5.5 percent) in the base case. Removing the effects of taxes and transfers and with equal hourly child care costs yields corresponding expenditure shares of 11.2, 9.0, 2.8 and 2.5 percent (versus 14.2, 11.3, 2.9 and 2.6 percent with the 50 percent expenditure ceiling).

8. Discussion

Children under the age of six (in 1999) live in families spending an average of $135 month on child care and with disposable incomes averaging $3,060 per month. Dividing the first number by the second suggests that 4.4 percent of income is devoted to child care. This simple calculation provides a misleading indication of child care expenditure shares for two reasons. First, it overweights higher income families. We calculate that the expenditure share of the average family is a somewhat higher 4.9 percent. [37]

[37] Consider a sample of three families with child care costs of $79, $98, and $313 and incomes of $1,152, $1,990, and $8,534 (corresponding to the sample averages for families in the 10-25th, 25-50th, and 90-100th percentiles of the actual income distribution). Total spending on child care is $490 and total incomes are $11,676 implying that 4.2 percent of income is spent on child care. Conversely, the three families devote 6.9 percent, 4.9 percent, and 3.7 percent of their incomes to

More importantly, any calculation of the average expenditure share conceals tremendous variation in child care spending. Perhaps most striking is that 63 percent of young children live in families that have no child care expenses. Roughly two-thirds of the time, this occurs because non-immediate family child care is not used. However, the remaining families use child care but pay nothing for it. The majority of free (or very low cost) care is provided by relatives (such as grandparents), although subsidized care in more formal settings is received by a substantial fraction of families.

Another noteworthy result is that average child care hours and expenditure shares are relatively constant across SES groups, as measured by predicted family income. For instance, the bottom decile average 26.3 hours of care weekly and pay 5.6 percent of their income for it, while the top decile use 27.9 hours per week and spend 5.5 percent of their income on it. The similarity of expenditure shares, despite much higher incomes at the top of the distribution, occurs because disadvantaged families far more extensively use cheaper types of care and pay less for any given mode. One likely implication is that at least some efforts by disadvantaged families to reduce spending on child care come at the cost of accepting lower quality services. [38] Our evidence also suggests that netting out child care expenses would raise measured income inequality, providing a further indication of the difficult situation of the least advantaged families.

These results notwithstanding, child care expenditure shares (and the quality of services received) would probably be much more unequal were it not for the efforts of low SES families to minimize expenses, of government tax and transfer policies that redistribute resources towards needy families, and of low cost (presumably subsidized) formal care that is targeted towards them. For instance, if all families paid the same amount for each hour of child care but did not change the amount used, the expenditure share for the 0-10th and 10-25th percentiles would rise from 5.6 and 4.7 percent to 12.6 and 9.8 percent, while those of the 75-90th and 90-100th percentiles would decline from 4.2 and 5.5 percent to 3.5 and 3.3 percent. Eliminating taxes and transfer payments would further raise expenditure shares of the bottom two groups, to 14.2 and 11.3

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child care, so that the average across families is 5.2 percent. The first procedure provides a smaller number because it weights high income families (who have smaller expenditure shares) more heavily, whereas the second gives each family an equal weight in calculating the average.

[38] There is also direct evidence that higher income families use higher quality care within modes (e.g. Galinsky, et al., 1994) and that more formal modes tend to offer higher quality of care (see Meyers et al., 2004 for a detailed discussion). Evidence that reductions in the cost of care cause parents to substitute market forms for less formal arrangements is provided by Michalopoulos and Robins 2002; Micholopoulos, Robins and Garfinkel 1992; Cleveland et al 1996; and Powell 1997. In his comprehensive study of child care choices, Blau (2001) concludes that "parents feel most 'priced out' of center and family day care and would prefer these types over other non-parental care and parental care if they were equally as cheap" (p. 74).

percent, while lowering those of the top two to 2.9 and 2.6 percent. These comparisons ignore the behavioral responses that would accompany such changes (e.g. shifting to cheaper modes or reducing total child care hours by low SES families), but nevertheless suggest that the current policy environment provides at least some assistance to the disadvantaged.

Our results should be viewed with caution for several reasons. As mentioned, we have looked at the cost of care and made some inferences about quality but do not have direct information on the latter. Similarly, we use the presence of extremely low-cost formal care as evidence of subsidies, in the absence of explicit data on these. Child care and family income will also sometimes be reported with error, particularly given the short period of time to which the data refer. This could be important since estimates of the average expenditure share (but not most other distributional measures) are somewhat sensitive to the treatment of outliers. Another potential issue is the use of family rather than household incomes. Although the distinction is generally not important, since the family and household are usually one and the same, disadvantaged families relatively often reside in households containing other adults. Depending on the nature of within-household income transfers, child care expenditure shares might be lower than those reported when measured as a percentage of household (rather than family) incomes. [39] Finally, decisions about employment and child care use are determined simultaneously and influenced by changes in the policy environment, wage rates, and relative prices of child care. Fully incorporating these complicated interactions represents an exciting topic for future research.

[39] Using household rather than family incomes reduces the average expenditure share from 4.9 to 4.4 percent and from 5.6 to 4.6 percent for the 0-10th percentile, 4.7 to 3.9 percent for the 10-25th percentile, 5.6 to 4.9 percent for the 25-50th percentile, 4.1 to 3.8 percent for the 50-75th percentile, 4.2 to 4.2 percent for the 75-90th percentile, and 5.5 to 5.4 percent for the 90-100th percentile of the predicted income distribution.

Table A.1: Sample Characteristics By Predicted Family Income

Caregiver Characteristic	Predicted Family Income Percentile					
	0-10	10-25	25-50	50-75	75-90	90-100
Age (years)	23.1	26.7	29.2	33.5	34.4	37.4
Female	96.6%	92.7%	95.6%	97.4%	98.8%	98.8%
White	51.2%	71.6%	76.8%	87.1%	89.5%	93.6%
Black	44.3%	26.5%	19.1%	7.0%	5.6%	2.1%
Other Nonwhite	3.9%	1.9%	4.1%	5.9%	4.9%	4.3%
Hispanic	33.7%	38.1%	20.5%	11.9%	4.3%	2.7%
Spouse Present	33.4%	50.8%	66.3%	84.2%	94.0%	94.9%
Spouse Absent	13.4%	15.1%	16.1%	10.8%	3.7%	3.9%
Never Married	53.2%	34.1%	17.6%	5.1%	2.3%	1.2%
High School Dropout	68.9%	43.7%	13.2%	0.2%	0.0%	0.0%
High School Graduate	28.5%	42.2%	46.6%	35.3%	1.2%	0.0%
Some College	2.6%	14.1%	39.1%	54.4%	28.3%	0.0%
College Graduate	0.0%	0.0%	1.2%	10.1%	70.5%	100.0%
# Children Aged 0-5	1.5	1.5	1.5	1.5	1.5	1.5
Age Youngest Child (Years)	1.8	2.2	2.3	2.4	2.1	2.4
# Persons in Family	3.3	3.7	3.9	4.2	4.2	4.1
Caregiver Work Hours/Week	16.9	18.6	22.5	23.8	22.9	23.5
All Parents' Work Hours/Week	28.9	38.9	49.7	60.6	66.4	67.6
Non-parent Adult in Household	52.3%	35.1%	23.7%	12.1%	6.1%	5.6%
Non-parent Working Adult in HH	41.0%	28.0%	17.6%	7.9%	3.5%	3.3%
Family Income as % of HH Income	68.4%	83.0%	89.5%	96.2%	98.5%	98.8%

Source: Data are from wave 10 of the 1996 panel of the SIPP.
Note: See Table 7 for details.

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